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Coccomyces prominens sp. nov. (*Rhytismataceae*) on *Rhododendron coeloneurum* in China

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Abstract — A fungus found on leaves of *Rhododendron coeloneurum* from Garze prefecture (Sichuan Province), China, is described as *Coccomyces prominens*. The new species is similar to *C. urceoloides* but differs by its much larger intraepidermal ascomata and the presence of conidiomata. The type specimen is deposited in the Reference Collection of Forest Fungi of Anhui Agricultural University, China (AAUF).

Key words — foliicolous fungus, morphological character, taxonomy, *Ericaceae*

Introduction

Coccomyces De Not. is the second-largest genus of *Rhytismataceae* (*Rhytismatales*, *Leotiomycetes*, *Ascomycota*), represented by 116 species recorded by Kirk et al. (2008) plus a few recently added. Members of this genus are widely distributed and occur on leaves, twigs, bark, or wood of vascular plants, especially *Ericaceae*, *Fagaceae*, and *Lauraceae* (Sherwood 1980). Twenty-eight *Coccomyces* species have been reported from China (Korf & Zhuang 1985; Lin 1998; Hou et al. 2006, 2007; Jia et al. 2012; Zheng et al. 2012; Wang et al. 2013; Yang et al. 2013) since Teng (1934) first recorded *C. dentatus* (J.C. Schmidt) Sacc. on *Quercus* and *Castanea* and *C. delta* (Kunze) Sacc. on *Lauraceae*.

Here, *Coccomyces prominens* on leaves of *Rhododendron coeloneurum* from Luding county, Garze prefecture, Sichuan Province, China, is described as a new species.

Materials & methods

Mature fruiting bodies were selected from the collected specimens. External shapes, size, color, ascomatal and conidiomatal openings, and zone lines were observed under

a dissecting microscope at 10–50× magnification. After rehydration in water, 10–20 µm thick vertical transverse sections of fruiting bodies were made using a freezing microtome and mounted in 0.7% (w/v) cotton blue in water. Gelatinous sheaths surrounding ascospores and paraphyses were observed in water or 0.1% (w/v) cotton blue in phenol glycerin. The colors of internal structures and paraphysis contents were observed in water. Measurements were made using material in 5% KOH and from ca 30 paraphyses, asci, ascospores, conidiogenous cells, and conidia for each specimen. Figures were drawn of the external and internal structures of the fruiting bodies using a microscopic drawing tube. The type collection is deposited in the Reference Collection of Forest Fungi of Anhui Agricultural University, Hefei, China (AAUF).

Taxonomy

Coccomyces prominens Y.F. Xu & Y.R. Lin, **sp. nov.** Figs 1–6

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Differs from *Coccomyces urceoloides* by its much larger, intraepidermal ascomata with an obvious pre-formed dehiscence mechanism, its wider ascospores enveloped in a gelatinous sheath, and its production of conidiomata.

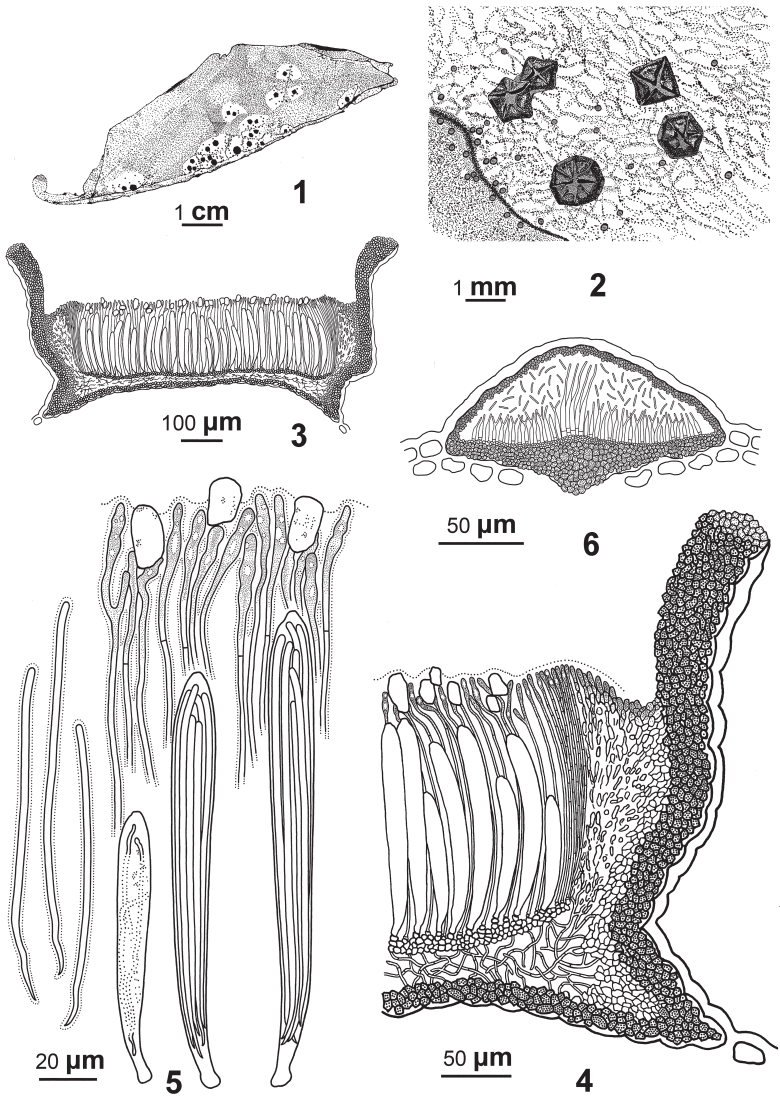
Type: China, Sichuan, Garze prefecture, Luding, Hailuogou, alt. ca 3400m, on fallen leaves of *Rhododendron coeloneurum* Diels (*Ericaceae*), 22 June 2009, Y.G. Liu & Y.R. Lin 2768 (**Holotype**, AAUF 68876).

Etymology: *prominens* (Latin = prominent), referring to the ascomata, which are noticeable on the substratum.

Zone lines usually frequent, brown or dark brown, thin to wide, somewhat diffused, nearly always partly surrounding the bleached spots.

Conidiomata in similar positions to ascomata on the substratum, scattered to clustered, sometimes several coalescent. In surface view, conidiomata 150–220 µm diam., rounded or subrounded, with a clearly marked outline, black-brown, moderately raising the leaf surface, discharging spores through an apical ostiole. In vertical transverse section, conidiomata intraepidermal, lenticular to semicircular. Upper wall 6.5–12 µm thick, almost not attenuating towards the base, composed of disparately sized angular cells. Basal wall 35–50 µm thick in the middle, becoming 13–20 µm thick at periphery, consisting of black-brown, angular and elongate, thick-walled cells 3.5–8 µm diam. Subconidiogenous layer 5–8 µm thick, composed of colorless, thin-walled angular cells 1.2–2 µm diam. Conidiogenous cells 10–14 × 1.5–2.2 µm, cylindrical but tapered towards the apex, hyaline, proliferating sympodially and percurrently. Conidia 4.5–7 × 0.5–0.8 µm, cylindrical, straight or slightly curved to one side, ends rounded or bluntly pointed, hyaline, aseptate, smooth-walled. Trichogynes 35–45 × 2–3 µm, cylindrical, tapering towards the apex, 1–2-septate near the base.

Ascomata epiphyllous, scattered or occasionally coalescent, in subcircular or irregular pale areas with obvious edges. In surface view, ascomata 800–1400



Figs 1–6. *Coccomyces prominens* (ex holotype, AAUF 68876) on *Rhododendron coeloneurum*. 1. A leaf bearing fruiting bodies and zone lines. 2. Conidiomata, ascomata, and a zone line observed under a dissecting microscope. 3. Ascoma in vertical transverse section. 4. Portion of ascoma in vertical transverse section. 5. Paraphyses, asci, and ascospores. 6. Conidioma in vertical transverse section.

μm diam., quadrilateral to octagonal, black-brown to black, not shiny or slightly shiny, edge defined, moderately raising the substrate surface, with an obvious pre-formed dehiscence mechanism, opening by 4–8 radial splits nearly extend to the edge of ascoma. Lips absent. In median vertical transverse section, ascomata intraepidermal. Covering stroma 55–65 μm thick near the opening, decreasing to 25–30 μm thick adjacent to the base, composed of black-brown textura angularis-epidermoidea with thick-walled cells 4–6.5 μm diam., connecting to the basal stroma. Adjacent to the top of the covering stroma, a flimsy structure develops consisting of angular, thin-walled, almost colorless cells staining with cotton blue. Basal stroma 18–22 μm thick, comprised of 2–3(–4) layers of dark brown, angular, thick-walled cells 4–6 μm diam. Excipulum well-developed, 45–60 μm thick, arising from the marginal paraphyses and the internal matrix of stroma, consisting of closely agglutinated septate hyphae 2–5 μm diam., mostly short-celled, with swollen greyish-brown apices. Internal matrix of stroma moderately developed, 20–50 μm thick, comprising hyaline, gelatinised textura intricata. Subhymenium colorless, 10–15 μm thick, composed of textura angularis. Paraphyses 160–190 × 1.8–2.2 μm, filiform, 0–1-septate, occasionally branched, yellowish-brown in the upper quarter, surrounded by a 0.6–0.8 μm thick gelatinous matrix, gradually irregularly swollen to 3–5 μm and containing disparately-sized oil drops near the apex, forming a 35–50 μm thick epithecium inserted with a number of hyaline, refractive, sub-oblong solid gels 12–32 × 8–14 μm. Asci ripening sequentially, 110–170 × 12–15 μm, cylindrical-clavate, short-stalked, thin-walled, apex bluntly pointed to subtruncate-conical, J–, 8-spored. Ascospores arranged fasciculately, 80–120 × 2–2.4 μm, filiform, hyaline, aseptate, enveloped in a 0.6–0.9 μm thick gelatinous sheath.

Host species, habitat and distribution: Producing ascomata and conidiomata on fallen leaves of *Rhododendron coeloneurum*. Known only from the type locality, Sichuan Province, China.

Comments — *Coccomyces prominens* resembles *C. urceoloides* Spooner in the well-developed excipulum with more or less brown hyphal tips, gradually swollen paraphyses at the apex, and refractive solid gels in the epithecium. However, *C. urceoloides* has smaller, hypophyllous, subepidermal ascomata (350–550 μm diam.) not associated with conidiomata; much smaller, narrowly cylindrical asci (120–135 × 5.5–6 μm); and smaller ascospores (80–98 × ca 1 μm) with a mucilaginous cap at the proximal end (Spooner 1990).

Coccomyces sinensis Y.R. Lin & Z.Z. Li is easily distinguished from *C. prominens* by its triangular to pentagonal ascomata, smaller asci (108–130 × 5.3–6.0 μm), smaller ascospores (54–90 × 1–1.2 μm), subhymenium consisting of textura porrecta-intricata, and distinct paraphyses that are abruptly swollen

to subfusoid-ventricose with a subcylindrical mucro near the apex (Lin et al. 2001).

The similar *C. monticola* Sherwood differs in the smaller and orbicular ascomata (500–800 µm diam.), a thinner covering stroma (20 µm thick), slightly swollen paraphysial apices (2.5 µm wide), and much narrower asci (8–9 µm wide; Sherwood 1980).

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